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FORM PTO – 1449	ATTORNEY DOCKET NO.: MIT-051CN2 (5473/53)
INFORMATION DISCLOSURE STATEMENT	APPLICANTS: Zilles et al.
	SERIAL NO.: 10/055,565
	FILING DATE: October 26, 2001
	GROUP: 2173

U.S. PATENT DOCUMENTS

EXAM. INIT.		DOCUMENT NUMBER	DATE	NAME	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
	A1	3,168,203	02/01/65	Gallistel	~~214~~	1	07/07/60
	A2	3,263,824	08/01/66	Jones et al.	214	1	12/20/63
	A3	3,449,008	06/01/69	Colechia	294	88	06/08/67
	A4	3,618,786	11/01/71	Fick	~~214~~	~~ICM~~	01/02/69
	A5	3,637,092	01/01/72	George et al.	~~214~~	~~ICM~~	04/30/70
	A6	4,062,455	12/13/77	Flatau	~~214~~	1	11/01/76
	A7	4,150,803	04/01/79	Fernandez	~~244~~	~~135A~~	10/05/77
	A8	4,302,138	11/01/81	Zarudiansky	414	5	01/22/79
	A9	4,510,574	04/09/85	Guttet et al.	~~700~~	~~360~~	08/23/82
	A10	4,604,016	08/01/86	Joyce	414	7	08/03/83
	A11	4,632,341	12/30/86	Repperger et al.	~~244~~	~~230~~	02/06/85
	A12	4,654,648	03/01/87	Herrington et al.	~~340~~	~~710~~	12/17/84
	A13	4,655,673	04/01/87	Hawkes	~~414~~	730	05/10/83
	A14	4,661,032	04/01/87	Arai	414	5	12/18/85
	A15	4,676,002	06/01/87	Slocum	33	LMP	12/20/85
	A16	4,795,296	01/01/89	Jau	414	5	10/17/86
	A17	4,800,721	01/31/89	Cemenska et al.	60	393	02/13/87
	A18	4,837,734	06/06/89	Ichikawa et al.	364	513	02/26/87
	A19	4,839,838	06/01/89	LaBiche et al.	364	709.1	03/30/87
	A20	4,888,538	12/19/89	Dimitrov et al.	318	675	05/14/87
	A21	4,893,981	01/16/90	Yoshinada et al.	414	5	03/26/87
	A22	4,907,970	03/01/90	Meenen, Jr.	434	45	03/30/88
	A23	4,907,973	03/13/90	Hon	434	262	11/14/88

Examiner: [signature] Date Considered: 7/29/04

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	A24	4,988,981	01/01/91	Zimmerman et al.	340	709	02/28/89
	A25	5,004,391	04/01/91	Burdea	414	6	08/21/89
	A26	5,007,300	04/01/91	Siva	74	471 X	01/22/90
	A27	5,018,922	05/01/91	Yoshinada et al.	414	5	09/12/89
	A28	5,019,761	05/28/91	Kraft	318	568.1	02/21/89
	A29	5,038,089	08/01/91	Szakaly	318	568.1	10/28/88
	A30	5,044,956	09/01/91	Behensky et al.	434	45	01/12/89
	A31	5,072,361	12/10/91	Davis et al.	364	167.1	02/01/90
	A32	5,103,404	04/07/92	McIntosh	318	568.2	12/20/89
	A33	5,116,051	05/01/92	Moncrief et al.	273	448 B	06/08/90
	A34	5,116,180	05/01/92	Fung et al.	414	5	05/03/90
	A35	5,142,931	09/01/92	Menahem	74	471 XV	02/14/91
	A36	5,143,505	09/01/92	Burdea et al.	414	5	02/26/91
	A37	5,184,319	02/02/93	Kramer	364	806	02/02/90
	A38	5,193,963	03/01/93	McAffee	414	5	10/01/90
	A39	5,223,776	06/29/93	Radke et al.	318	568.1	12/31/90
	A40	5,239,246	08/24/93	Kim	318	568.11	07/08/92
	A41	5,255,211	10/01/93	Redmond	364	578	02/22/90
	A42	5,264,768	11/23/93	Gregory et al.	318	561	10/06/92
	A43	5,266,875	11/01/93	Slotine et al.	395	99X	05/01/91
	A44	5,354,162	10/01/94	Burdea et al.	414	5	10/11/94
	A45	5,382,885	01/17/95	Salcudean et al.	318	568.11	08/09/93
	A46	5,389,865	02/14/95	Jacobus et al.	318	568.11	12/02/92
	A47	5,429,140	07/04/95	Burdea et al.	128	774	06/04/93
	A48	5,459,382	10/17/95	Jacobus et al.	318	568.11	06/09/94
	A49	5,482,051	01/09/96	Reddy et al.	128	733	04/06/94

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	A50	5,489,830	02/01/96	Fernandez	~~318~~	~~628~~	09/01/94
	A51	5,497,452	03/05/96	Shimizu et al.	~~395~~	~~120~~	03/02/92
	A52	5,515,078	05/01/96	Greschler et al.	~~345~~	~~156~~	
	A53	5,576,727	11/19/96	Rosenberg et al.	~~345~~	~~179~~	06/05/95
	A54	D. 377,932	02/11/97	Schena et al.	D14	~~114~~	10/31/95
	A55	5,623,582	04/22/97	Rosenberg	~~395~~	~~99~~	07/14/94
	A56	5,625,576	04/29/97	Massie et al.	~~364~~	~~578~~	10/01/93
	A57	5,629,594	05/13/97	Jacobus et al.	318	568.11	10/16/95
	A58	5,691,898	11/25/97	Rosenberg et al.	~~364~~	190	03/28/96
	A59	5,701,140	12/23/97	Rosenberg et al.	~~345~~	~~156~~	07/12/94
	A60	5,721,566	02/24/98	Rosenberg et al.	~~345~~	~~161~~	06/09/95
	A61	5,724,264	03/03/98	Rosenberg et al.	~~364~~	~~359~~	08/07/95
	A62	5,734,373	03/31/98	Rosenberg et al.	~~345~~	~~161~~	12/01/95
	A63	5,737,505	04/07/98	Shaw et al.	~~395~~	~~119~~	10/15/96
	A64	5,739,811	04/14/98	Rosenberg et al.	~~345~~	161	09/27/95
	A65	5,751,289	05/12/98	Myers	~~345~~	~~419~~	01/16/96
	A66	5,754,023	05/19/98	Roston et al.	~~318~~	~~561~~	10/22/96
	A67	5,769,640	08/01/98	Jacobus et al.	~~434~~	~~262~~	08/10/95
	A68	5,784,542	07/21/98	Ohm et al.	~~395~~	~~95~~	10/23/96
	A69	5,790,108	08/04/98	Salcudean et al.	~~345~~	~~184~~	10/23/92
	A70	5,798,752	08/25/98	Buxton et al.	345	146	02/27/95
	A71	5,844,392	12/01/98	Peurach et al.	~~318~~	~~568.17~~	05/21/97
	A72	6,046,726	04/04/00	Keyson	345	~~156~~	09/29/97

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	B3	WO 96/42078	12/27/96	PCT	G09G	3/02	06/07/96	N	Y
	B4	WO 97/06410	02/20/97	PCT	G01C	7/00	07/29/96	N	Y
	B5	WO 97/12337	04/03/97	PCT	G06F	19/00	09/25/96	N	Y
	B6	WO 97/12357	04/03/97	PCT	G09G	5/00	09/25/96	N	Y
	B7	WO 97/19440	05/29/97	PCT	G09G	5/00	11/05/96	N	Y
	B8	WO 97/21160	06/12/97	PCT	G06F	N/A	11/26/96	N	Y

OTHER ART, JOURNAL ARTICLES, ETC.

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	C2	Agrawala, M. et al."3D Painting on Scanned Surfaces", Stanford University, 1995, pgs 145-150.
	C3	Atkinson, W. D. et al., "Computing with Feeling" COMPUT. & GRAPHICS, Vol. 2, 1977, pgs. 97-103.
	C4	Barr, Alan H., "Global and Local Deformations of Solid Primitives"; COMPUTER GRAPHICS, Vol. 18, No. 3, pgs. 21-30 (July, 1984).
	C5	Blinn, J.F., "Simulation of Wrinkled Surfaces," COMPUTER GRAPHICS, Volume 12-3, August 1978, pgs. 286-292.
	C6	Brooks, F. P. et al., "Project GROPE - Haptic Displays for Scientific Visualization," COMPUTER GRAPHICS, Vol. 24, No. 4, August 1990, pgs. 177-185.
	C7	Colgate, J. E. et al., "Factors Affecting the Z-Width of a Haptic Display," published by IEEE Computer Society Press, Los Alamitos, California, in Proceedings: 1994 IEEE International Conference On Robotics and Automation, held May 8-13, 1994 in San Diego, California, Vol. 4, 1994, pgs. 3205-3210.
	C8	Colgate, J. E. et al., "Issues in the Haptic Display of Tool Use," published by IEEE Computer Society Press, Los Alamitos, California, in Proceedings: 1995 IEEE/RSJ International Conference on Intelligent Robots and Systems - Human Robot Interaction and Cooperative Robots, held August 5-9, 1995 in Pittsburgh, Pennsylvania, 1995, pgs. 140-145.
	C9	Dworkin, P. et al., "A New Model for Efficient Dynamic," Fourth Eurographics Animation and Simulation Workshop Proceedings Eurographics Technical Report Series, ISSN 1017-4656, September 4-5, 1993, pp. 135-147.

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	C10	Ioeue H.et al., "Parallel Manipulator," Proceedings of 3rd Robotics Research: The Third International Symposium, Faugeras & Giralt, eds., MIT Press 1986.
	C11	Iwata H., "Pen-based Haptic Virtual Environment," Proceedings of IEEE Virtual Reality Annual International Symposium, (September 18-22, 1993, Seattle, WA), pp. 287-292.
	C12	Hirata, Y. et al., "3-Dimensional Interface Device for Virtual Work Space," Proceedings of the 1992 IEEE, July 7-10, 1992, pp. 889-896.
	C13	Howe, R.D. et al., "Task Performance with a Dextrous Teleoperated Hand System," Telemanipulator Technology, November 1992, Proceedings of SPIE, Vol. 1833, pp. 1-9.
	C14	Immersion Corporation Website, Immersion Corporation, 1997, 4 pgs. (not admitted as prior art)
	C15	Immersion Corporation, "Laparoscopic IMPULSE ENGINE©: A New FORCE FEEDBACK Surgical Simulation Tool", Immersion Corporation, 1995.
	C16	Immersion Corporation, "Virtual Laparoscopic Interface", Immersion Corporation, 1995, 1 pg.
	C17	Immersion Corporation, "The IMPULSE ENGINE™", Immersion Corporation, 1996.
	C18	Kotoku, T., et al., "A Force Display Algorithm for Virtual Environments," SICE, pp. 347-355, 1992.
	C19	Kraft Telerobotics, Inc., "GRIPS Force Feedback Manipulator System," Kraft Telerobotics, Inc. (date Unknown) 4 pgs.
	C20	Kraft Telerobotics, Inc., "GRIPS Master/Slave Manipulator System," Kraft Telerobotics, Inc., 1988.
	C21	Kraft Ocean Systems, "Grips Underwater Manipulator System", 4 pgs. (date unknown)
	C22	Marcus, B.A., et al., "EXOS Research on Master Controllers for Robotic Devices," FIFTH ANNUAL WORKSHOP ON SPACE OPERATIONS APPLICATIONS AND RESEARCH (SOAR '91) pp. 238-245, July 1991.
	C23	Massie, T. H., "Design of a Three Degree of Freedom Force-Reflecting Haptic Interface", Massachusetts Institute of Technology, Bachelor of Science in Electrical Science and Engineering Thesis, May, 1993, pgs. 1-38.
	C24	Massie, T. H., "Initial Haptic Explorations with the Phantom: Virtual Touch Through Point Interaction", Massachusetts Institute of Technology Master of Science Thesis, February, 1996, pgs. 1-49. (not admitted as prior art)
	C25	McAffee et al., "Teleoperator Subsystem/Telerobot Demonstrator," Force Reflecting Hand Controller Equipment Manual, Jet Propulsion Laboratory, January 1988.
	C26	Minsky et al., "Feeling and Seeing: Issues in Force Display," COMPUTER GRAPHICS, Vol. 24, No. 2, March 1990, pgs. 235-270.
	C27	Minsky, M., "Computational Haptics: The Sandpaper System for Synthesizing Texture for a Force-Feedback Display," Massachusetts Institute of Technology Ph.D. Thesis, June, 1995, pgs. 1-217.
	C28	Morgenbesser, H. B., "Force Shading for Shape Perception in Haptic Virtual Environments", Massachusetts Institute of Technology Master of Engineering Thesis, September, 1995, pgs. 1-77.
	C29	Salcudean S. E. et al., "On the Emulation of Stiff Walls and Static Friction with a Magnetically Levitated Input/Output Device," DYNAMIC SYSTEMS AND CONTROL: VOLUME 1, DSC-Vol. 55-1, 1994, pgs. 303-309.

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	C30	Salisbury, K. et al., "Haptic Rendering: Programming Touch Interaction with Virtual Objects," Presented and disseminated at the 1995 Symposium on Interactive 3D Graphics held April 9-12, 1995 in Monterey, CA, sponsored by the Association for Computing Machinery (ACM) and published by the ACM in Proceedings: 1995 Symposium on Interactive 3D Graphics, Monterey, California, April 9-12, 1995, pgs. 123-130.
	C31	SensAble Devices, Inc., "Phantom Haptic Interface," 1995, Cambridge, MA (2 pgs).
	C32	SensAble Technologies, Inc., "Phantom Haptic Interface," 1996, Cambridge, MA (6 pgs).
	C33	Shimoga, K. B., "A Survey of Perceptual Feedback Issues in Dextrous Telemanipulation: Part I. Finger Force Feedback" published by IEEE Neural Networks Council in IEEE Virtual Reality Annual International Symposium, held September 18-22, 1993 in Seattle, Washington, 1993, pgs. 263-270.
	C34	Snow, E. et al., "Compact Force-Reflecting Hand Controller," NASA Tech Brief, Vol. 15, No. 4 from Jet Propulsion Laboratory Report NPO-17851-7348, April 1991, pgs. i, 1-3, 1a-11a, 14a, 15a.
	C35	Sutter, P.H., J. C. Iatridis and N. V. Thakor, "Response to Reflected-Force Feedback to Fingers in Teleoperations," Proc. of the NASA Conf. on Space Telerobotics, pp. 65-74, NASA JPL, January 1989.
	C36	Swarup, N., "Haptic Interaction with Deformable Objects Using Real-Time Dynamic Simulation", Massachusetts Institute of Technology, September 1995, pgs. 1-83.
	C37	Tanie, K., et al., "Force Display Algorithms", 1993 IEEE International Conference on Robotics and Automation, May 2-7, 1993, Atlanta Georgia, USA, 1993, pp. 60-78.
	C38	Wang, S.W. and Kaufman, A.E., "Volume Sculpting", 1995 Symposium on Interactive 3D Graphics, Monterey, California, pgs. 151-156.
	C39	Terzopoulos, D. et al.: "Elastically Deformable Models"; COMPUTER GRAPHICS, Vol. 21, No. 4, pgs. 205-214 (July, 1987).
	C40	Yoshikawa, T. et al., "Construction of Virtual World Using Dynamics Modules and Interaction Modules," Proceedings of the 1996 IEEE International Conference on Robotics and Automation (Minneapolis, MN), pp. 2358-2364 (April 1996).
	C41	Zilles, C. B. et al., "A Constraint-Based God-object Method for Haptic Display," published by IEEE Computer Society Press, Los Alamitos, California, in Proceedings of the 1995 IEEE/RSJ International Conference on Intelligent Robots and Systems - Human Robot Interaction and Cooperative Robots, held August 5-9, 1995 in Pittsburgh, Pennsylvania, 1995, pgs. 146-151.

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